

## Description of a New Zoarcid Fish, *Lycodes sadoensis*, from the Sea of Japan

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(Received August 7, 1979)

**Abstract** A new species of the Zoarcidae, *Lycodes sadoensis*, is described from the Sea of Japan. It resembles *L. teraoi* in proportional measurements and counts. However, it is separable from *L. teraoi* in having blotches on the body.

Since 1963, a small species, closely related to *Lycodes teraoi* Katayama, has been known from off the coast of Sado Island, the Sea of Japan. The scientific name, *Lycodes sadoensis*, was applied to it, but that is either a nomen nudum or an unavailable name. Here, we describe this species based on specimens captured by trawl net from off Ishikawa Prefecture, the Sea of Japan, and compare it with related species.

Specimens used in this study are deposited in the Laboratory of Marine Zoology, Hokkaido University (HUMZ), National Museum of Natural Sciences, Museums of Canada, Ottawa, (NMC), Department of Zoology, University Museum, University of Tokyo (ZUMT), and National Science Museum, Tokyo (NSMT). Measurements followed Hubbs and Lagler (1958). Fin rays and vertebrae were counted from radiographs or actual specimens. Vertebral counts include the urostylar centrum.

### *Lycodes sadoensis*, sp. nov.

(Japanese name: Sadohina-gege)

(Fig. 1)

*Lycodes* sp. (*Lycodes sadoensis* Matsubara et Honma MS.); Honma, 1963: 21 (nomen nudum; Japanese name, Sadohina-gege).

*Lycodes* sp.; Honma and Sugihara, 1963: 7.

*Lycodes sadoensis* Matsubara et Honma (MS), Honma, 1969: 31, fig. 9 (unavailable name; not accompanied by a statement that purports to give characters differentiating taxon, Article 13 (a)).

Holotype: HUMZ 65832 (143.2 mm TL, male), 37°33.5'N, 136°15'E, off Ishikawa Prefecture, Japan, 235 m, June 7, 1977.

Paratypes: HUMZ 65828 (139.6 mm TL, female), HUMZ 65829 (131.2 mm TL, male), HUMZ 65830 (130.8 mm TL, male), HUMZ 65831 (135.0 mm TL, male), HUMZ 65833 (134.6 mm TL, male), ZUMT 54225 (139.6 mm TL, male), ZUMT 54226 (134.0 mm TL, male), captured with the holotype; NMC 79~697 (143.4 mm TL, male), 37°14'N, 136°27'E, off Ishikawa Prefecture, Japan, 169~210 m, June 7, 1977.

Comparative materials of other species: *Lycodes teraoi*. Holotype: NSMT-P 18223 (165.0 mm TL, male), off Tsuiyama, Hyogo Prefecture, about 100 fathoms, April 2, 1943. Paratypes: HUMZ 86838 (109.3 mm TL, male), HUMZ 86839 (120.0 mm TL, male), HUMZ 86840 (137.0 mm TL, male), HUMZ 86841 (138.4 mm TL, male), captured with the holotype.

**Diagnosis.** Body and head brownish in dorsal half and light in ventral half. Dorsal fin with somewhat dark margin and 3 or more spots anteriorly. Dorsal rays 72~78, anal rays 62~65, pectoral rays 15, and vertebrae 20+62~67=82~87.

**Description of the holotype and paratypes.** Counts and proportions of holotype are given first, followed by those of paratypes in parentheses.

Body moderately elongate and deep, its depth about 1/9 (1/9~1/10) of total length. Head somewhat depressed. Interorbital space narrow and convex, its width narrower than eye diameter. Mouth moderate in size; maxillary extending below posterior half of eye. Lower jaw completely included, its length a little shorter than gill opening. Teeth small and conical; those on upper jaw

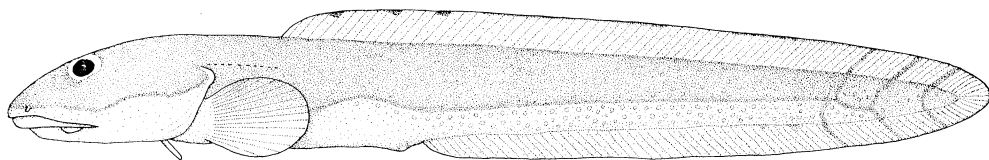


Fig. 1. Holotype of *Lycodes sadoensis*, HUMZ 65832 (143.2 mm TL), from off Ishikawa Prefecture, the Sea of Japan. Scale indicates 20 mm.

in a single row laterally and 2 rows anteriorly; those on lower jaw in irregular 2 (2 or 3) rows. Vomer with a group of 5 conical teeth. Palatine teeth in a single row. Lateral line indistinct, consisting of a midlateral series of neuromasts, and running to a point below dorsal fin origin. Small isolated scales covering body except for head, belly, and pectoral fin. Scales also extending onto basal half of dorsal and anal fins. Dorsal fin originating above posterior half of pectoral fin. Anal fin inserted below 13th (13th or 14th) dorsal ray. Pectoral fin short, fan-like, with round margin and its length half of head. Caudal fin very short, having 8 principal rays. Pelvic

fin very short, 1.4 (1.4~1.6) times pupil. Pyloric caeca 2.

Color of fresh specimens brownish in dorsal half and light in ventral half of body. Irregular vertical lines, 3 in number, on side of body near caudal fin. These lines becoming unclear in formalin and alcohol specimens. Head brownish in dorsal half and light in ventral half. Lower margin of brownish body and head becoming clear by dark lines. Belly light. Dorsal fin having somewhat dark margin and 3 (3 or more) dark spots anteriorly. Peritoneum blackish brown.

**Distribution.** Off Ishikawa Prefecture and near Sado Island, both in the Sea of Japan.

Table 1. Comparison of *Lycodes sadoensis* with *L. teraoi*. Data on the latter species are from the holotype and four paratypes.

Characters	<i>Lycodes sadoensis</i>		<i>Lycodes teraoi</i>
	Holotype	Paratypes	Holotypes and paratypes
Total length (mm)	143.4	130.8~143.4	109.3~165.0
In TL:			
Snout to anal-fin origin	2.43	2.16~2.65	2.27~2.38
Head length	4.73	4.33~5.21	4.50~5.25
Body depth	11.03	9.92~11.63	11.50~12.40
Pectoral fin	10.02	9.50~12.35	8.60~11.37
In HL:			
Head width	1.99	1.76~2.26	2.06~2.47
Snout length	3.29	2.31~3.29	3.12~3.46
Upper jaw length	2.33	1.86~2.36	2.56~2.61
Lower jaw length	2.56	2.11~3.08	2.49~2.93
Eye diameter	4.73	3.97~5.36	3.78~5.13
Gill opening	2.38	2.23~2.70	2.32~2.96
Pectoral fin	2.11	1.93~2.51	1.63~2.51
Pelvic fin	7.21	5.63~7.48	5.20~8.27
Counts:			
Dorsal rays	75	72~78	75~80
Anal rays	65	62~65	64~67
Pectoral rays	15	15	15~17
Principal caudal rays	8	8	8
Vertebrae	20+66=86	20+62~67=82~87	19~20+63~68=82~88

## Discussion

The present new species has been recognized and recorded by Honma (1963, 1969) and Honma and Sugihara (1963) as an independent species from the water near Sado Island, Niigata Prefecture, the Sea of Japan. We described it as a new species using the previously used scientific name "*Lycodes sadoensis*" and the Japanese name "sadohina-genge".

*Lycodes sadoensis* is most closely related to *L. teraoi* Katayama known from the water off Hyogo Prefecture, the Sea of Japan, in the agreements of fin-ray counts and the proportional measurements which separate these two species from the others of *Lycodes*. Although dorsal, anal and pectoral counts tend to be lower in *L. sadoensis* than in *L. teraoi* (Table 1), the two species cannot be distinguished by the fin-ray counts and proportions. The upper jaw of *L. sadoensis* is somewhat longer than that of *L. teraoi*. However, that character is variable in the Zoarcidae including *Lycodes*. The upper jaw length changes with size and tends to be longer in males. However, there was no overlap in relative jaw length between the two species in all specimens examined.

The other differences are found only in coloration. The present species always has a brownish dorsal half of the head and body, some vertical lines on the body near the caudal fin and three or more dark spots on the dorsal fin in both sexes. On the other hand, *L. teraoi* has a uniformly pale greyish pink body without any blotches (Katayama, 1943 and pers. comm.).

In some species of zoarcids such as *Lycodes tanakae*, the body hue and blotches change with size, sex and locality, but in many species, at least in adults, the pattern is quite constant. We propose here the present new species as distinct from *L. teraoi*.

## Acknowledgments

We wish to express our thanks to Prof. Takao Igarashi and Dr. Kunio Amaoka of the Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University, for their useful advice. We are also grateful to Dr. Don E. McAllister of the National Museum of Canada, Museum of Natural Sciences,

Ottawa, for his kind review of the manuscript, and to Dr. Masao Katayama, the former Prof. at the Yamaguchi University for his valuable advice.

## Literature cited

- Honma, Y. 1963. Fish-fauna (Agnatha, Chondrichthyes, Osteichthyes) of Sado Island, Sea of Japan. Publ. Sado Mus., 5: 12~31. (In Japanese).
- Honma, Y. 1969. An outline of the ichthyofauna in the waters adjacent to Sado Island. Res. Rep. Sado Mar. Park, 21~31, figs. 1~12. (In Japanese).
- Honma, Y. and C. Sugihara. 1963. A revised list of the blennioid and ophidioid fishes of the suborder Blenniina obtained from the waters of Sado Island, including the area of Yamagata Prefecture, Sea of Japan. Bull. Sado Mus., 11: 5~9. (In Japanese).
- Hubbs, C. L. and K. F. Lagler. 1958. The fishes of the Great Lakes region. Bull. Cranbrook Inst. Sci., 26: 1~123, figs. 1~251.
- Katayama, M. 1943. On two new ophidioid fishes from the Japan Sea. Annot. Zool. Japon., 22(2): 101~104, figs. 1~2.
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## 日本海より得られたマユガジ属の1新種

豊島 貢・本間義治

本種はこれまで、本間 (1963, 1969) および本間・杉原 (1963) により、佐渡近海より報告されてきた。しかしながら、これらの報文では、記載および近縁種との比較検討もなされていない。そこで本論文では、以前より使用されている学名および和名、*Lycodes sadoensis* サドヒナゲングを本種に採用して記載した。

サドヒナゲングは鰭条数、脊椎骨数および体各部の割合によってマユガジ属の他の種とは明瞭に区別され、同時にこれらの形質によってヒナゲング *Lycodes teraoi* に近縁であることがわかる。

本種とヒナゲングの相違は斑紋の有無のみである。つまり、本種では、体と頭の背側は褐色で、腹側は淡色であり、体後部および背鰭前部には濃褐色の斑紋がある。一方、ヒナゲングの体色は一律に灰色をおび、斑紋はまったく認められない。これらの相違は、雌雄差および成長にともなう変異を考慮に入れても、両種を別種とする根拠として充分である。

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